

REMARKS/ARGUMENTS

Claims 1 – 3 and 5 – 14 are hereby presented for reconsideration and further examination in view of the following remarks. No claim amendments are presented.

Initially, Applicant thanks the Examiner for the withdrawal of all previous claim objections and rejections.

In the outstanding Office Action, the Examiner rejected claims 9, 10, and 12-14 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,916,000 to Li et al. (hereinafter “Li”) in view of anonymous published abstract RD 305027A (hereinafter “RD305027A”), and rejected claims 1 – 8 and 11 under 35 U.S.C. 103(a) as being unpatentable over Li in view of RD305027A and further in view of Ref. No. WO 00/42246 to Bottger et al. (hereinafter “Bottger”).

By this Response, the above rejections are traversed.

SUBSTANTIVE CLAIM REJECTIONS UNDER 35 USC 103

As a general comment, it is to be noted that the present invention claims specific combinations of features for providing an improved shell for a ballistic helmet made from para-aramide layers and bonding resin. In the claim rejections, the Examiner has provided a mosaicing of text portions, taken partially from different examples and also different references, to suggest that the such a combination of features as claimed are thus known or obvious. It is respectfully submitted that such a mosaicing has the benefit of hindsight in view of the present application and would not have been considered in this manner by a person having ordinary skill in the art at the time the application

was filed, and further, such combinations do not disclose, teach or suggest all of the features of the invention as claimed.

REJECTIONS UNDER 35 U.S.C. 103(a)

In the outstanding Office Action, the Examiner rejected claims 9, 10, and 12 – 14 under 35 U.S.C. 103(a) as being unpatentable over Li in view of RD305027A, and rejected claims 1 – 8 [sic] and 11 under 35 U.S.C. 103(a) as being unpatentable over Li in view of RD305027A and further in view of Bottger.

RESPONSE

Reconsideration and withdrawal of the rejections are requested.

Legal Basis for Response

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all of the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

Applicant submits that the Examiner has failed to show proper motivation to combine the cited references, and has ignored the required tenets for applying 35 USC 103, as set out in the

MPEP at section 2141. See *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). The standard for obviousness is not one of technical skill; rather it is one of **motivation to combine the references**.

A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103.

The motivation requirement under 35 USC 103 was clarified by *Dystar Textilfarben GMBH & Co Deutschland KG v. C.H. Patrick, Co., et al.*, 464 F.3d 1356; 80 P.Q.2d 1481; No. 06-1088, (CAFC, October 3, 2006):

"... [The proper question is] '[w]hat the prior art teaches, whether it teaches away from the claimed invention, and whether it motivates a combination of teachings from different references.'" 06-1088, at 7; also at 11-12, and at 25.

The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. *Id.* at 1366.

The Examiner is also directed to MPEP 706.02(II), regarding citation of abstracts of foreign-language patent documents (emphases added), which is quoted in full below.

Prior art uncovered in searching the claimed subject matter of a patent application often includes English language abstracts of underlying documents, such as technical

literature or foreign patent documents which may not be in the English language. When an abstract is used to support a rejection, the evidence relied upon is the facts contained in the abstract, not additional facts that may be contained in the underlying full text document. *Citation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art.* See Ex parte Jones, 62 USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001) (unpublished). To determine whether both the abstract and the underlying document are prior art, a copy of the underlying document must be obtained and analyzed. If the document is in a language other than English and the examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the examiner is relying upon in support of the rejection. The record must also be clear as to whether the examiner is relying upon the abstract or the full text document to support a rejection. The rationale for this is several-fold. It is not uncommon for a full text document to reveal that the document fully anticipates an invention that the abstract renders obvious at best. *The converse may also be true, that the full text document will include teachings away from the invention that will preclude an obviousness rejection under 35 U.S.C. 103, when the abstract alone appears to support the rejection.* An abstract can have a different effective publication date than the full text document. Because all patentability determinations are fact dependent, *obtaining and considering full text documents at the earliest practicable time in the examination process will yield the fullest available set of facts upon which to determine patentability, thereby improving quality and reducing pendency.* When both the abstract and the underlying document qualify as prior art, the underlying document should normally be used to support a rejection. In limited circumstances, it may be appropriate for the examiner to make a rejection in a non-final Office action based in whole or in part on the abstract only without relying on the full text document. In such circumstances, the full text document and a translation (if not in English) may be supplied in the next Office action. Whether the next Office action may be made final is governed by MPEP § 706.07(a).

Claims 9, 10, and 12 – 14

Independent claim 9 recites a “[s]hell for ballistic helmet formed from a plurality of paraaramide fabric layers and bonding resin, wherein said plurality of layers is greater than 28 and said shell has average thickness less than 6.5 mm.”

Independent claim 10 recites a “shell for ballistic helmet formed from a plurality of paraaramide fabric layers and bonding resin, wherein said plurality of layers is not less than 38.”

Independent claim 12 recites a “[s]hell for ballistic helmet formed from a plurality of paraaramide fabric layers and bonding resin, wherein said plurality of layers is greater than 28 and said shell has average areal density less than 7.0 Kg/m^2 .”

Claims 13 and 14 depend from claim 12, and thus inherit all of the claim features of independent claim 12.

Li is directed to a ballistic-resistant composite article. The Examiner concedes that claims 9, 10, and 12 – 14 are novel over Li, and adds that “Li et al does not specifically teach the para-aramide fibers...”

The Examiner cites RD305027A to cure the deficiencies of Li.

Initially, Applicants respectfully submit that RD305027A has been improperly cited as an abstract, and that the underlying document should be provided by the Examiner, since the full text document may include teachings away from the invention that will preclude an obviousness rejection under 35 U.S.C. 103. In accordance with MPEP 706.02, since the Examiner has made a rejection in a non-final Office action based in whole or in part on the abstract only without relying on the full text document, the full text document and a translation should be supplied in the next Office action.

In any case, RD305027A discloses a composite helmet made from tightly woven para-aramide coated with non-penetrating thermoplastic. The Examiner states that “the RD 305027 disclosure teaches a ballistic composite comprising the claimed para-aramide fibers” and that

“motivation to employ para-aramide fibers over aramide fibers could be found in cost, availability, and ease of manufacturing. Therefore, motivated by the desire to produce a ballistic material suitable in the formation of helmets, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the ballistic composite material of Li et al., with the paraaramide fiber taught in the ‘027 disclosure.”

The Examiner’s purported motivation, and the rejection based thereon, are traversed, because the motivation given by the Examiner is not found in the cited art, because the cited art teaches away from the present claims, and because the cited combination fails to produce the claimed structure.

Li is concerned with an impact resistant composite having one or more layers, in which at least one layer has a network of filaments having very specific properties. In particular, Li places particular emphasis providing the fibers in a "prepreg or pultruded sheet" (column 2, line 33; column 9, line 6), wherein the matrix material *impregnates the individual filaments* (see also column 4, lines 22-23; column 12, lines 32 to 42).

In contradistinction, RD305027A, in its “USE/ADVANTAGE” section, recites that “[u]sing a tight fabric weave and a *non-penetrating thermoplastic coating*, helmets can be made that are 30% or more lighter than current systems...” (emphasis added) Accordingly, RD305027A teaches to tightly weave fibers into a fabric, and then to coat the fabric with resin in a way that minimizes or prevents penetration of the resin into the woven structure. Thus, RD305027A *teaches fully away*

from impregnating fibers in the manner suggested by Li, and neither Li nor RD305027A provide any motivation to consider the combination of the two references.

That is, no motivation for combination can be found in the cited art, and the Examiner's motivation ("cost, availability, and ease of manufacturing") has been generated by the Examiner independent of the cited art, and with no regard to the specific teachings of the cited art. Such a motivation provides an improper basis for rejection of the present claims.

In any case, even if *arguendo* the references were combined, the combination does not disclose nor suggest the presently claimed invention.

It is to be noted as a general comment that "Examples" provided in patents, by their very nature, refer specifically to the particular combinations of materials, quantities, procedures, conditions, etc. disclosed by the example. A man of the art knows that such examples cannot be "tampered with" by randomly changing one or more of the parameters (for example providing different fabrics) that is not even mentioned in the patent, while expecting the same result to be obtained. Thus, Applicant traverses any suggestion to combine the disclosure of an "example" with another document, or even with different parts of the same document, in particular where there is no basis for assuming that all other parameters should remain unchanged after the one parameter is changed, and where there is no explicit indication in the original document for allowing such a combination.

Specifically, the Examiner cites Li, column 18, lines 40-45, column 10, lines 35-50 and column 6, lines 5-10 as disclosing a ballistic material comprising 164 fabric layers comprising aramide fibers and resin matrix.

However, column 18, lines 40-45 does not explicitly mention any fibers, but refers to "the prepreg sheet" of Example 1. Example 1 is directed to a "ballistic panel prepared by molding a plurality of sheets comprised of...polyethylene...". The Examiner agrees that there is no disclosure whatsoever in this example of using para-aramide fibers, and suggests that it would be obvious to use para-aramide fibers in view of RD305027A. However, column 18 is here referring to a specific "example", in which polyethylene yarn is impregnated with a matrix (column 18, line 7, 8) and thus teaches away from any combination with RD305027A, which specifically is directed away from impregnated fibers.

Further, even if the two references were combined, there is no teaching that the specific parameters of the Example would or could be maintained for a different fiber, in particular if the new fiber (para-aramide) according to the combination is to be provided in a non-impregnated manner.

Further, there is no disclosure in Example 1 of Li for providing a "shell for [a] ballistic helmet" as presently claimed, less so a shell having "an average thickness of less than 6.5mm." (Claim 9)

Similarly, regarding column 10, lines 35-50, the Examiner also agrees that this does not mention the para-aramide fibers limitations of claims 9-10 or 12-14. However, even if this section of

Li were to be understood to also refer to para-aramide fibers, this does nothing in terms of providing or suggesting the other limitations of claims 9-10 or 12-14.

Similarly, column 6, lines 5-10 merely mentions a number of different filaments that may be used, but does not provide any disclosure of the specific features of the rejected claims, and therefore the combination of this reference with RD305027A does nothing in terms of providing or suggesting the other limitations of claims 9-10 or 12-14. Thus, it is respectfully submitted that the combination of references does not disclose or suggest claims 9, 10, 12, 13 or 14.

Further, the Examiner specifically cited column 19, lines 15-36 as disclosing "a composite comprising 30 layers, each having a thickness of 0.02cm". The Examiner agrees that there is no disclosure whatsoever in this example of using para-aramide fibers, and suggests that it would be obvious to use para amide fibers in view of RD305027A. However, it is not a proper combination of references to simply assign a particular thickness of layer, and a particular number of layers, to one type of fabric just because it is disclosed regarding a specific Example to another type of fabric (see general comments above regarding combining an "example" with another document). There is no disclosure or suggestion that the average thickness of shell would also have to be less than 6.5mm with para-aramide fibers. Furthermore, there is no mention whatsoever of providing a shell for a ballistic helmet. Thus, it is respectfully submitted that the combination of references does not disclose or suggest all the features of independent claim 9.

The Examiner also cited column 19, lines 40-45 as teaching a composite panel with areal density of 6.02 Kg/m². The Examiner agrees that there is no disclosure whatsoever in this example

of using para-aramide fibers, and suggests that it would be obvious to use para amide fibers in view of RD305027A. Again, this refers to another "example" (Example 4), and there is no motivation per se to combine this example with any other document, less so RD305027A, at least for the reasons referred to above regarding combining an "example" with another document. Furthermore, this example appears to suggest impregnation of the fabrics, while RD305027A, as noted above, teaches against this. In any case, there is no disclosure or suggestion, even if combined, that more than 28 layers of fabric should be provided. Furthermore, there is no mention whatsoever of providing a shell for a ballistic helmet. Thus, it is respectfully submitted that the combination of references does not disclose or suggest all the features of independent claim 12, and thus claims 13 and 14 dependent therefrom.

Finally, the Examiner also cites column 11, lines 1-21 as teaching a pressure bonding limitation of 69,000 kpa (703kg/cm²). However, this refers to ECPE (polyethylene) filaments, and does not mention para-aramide fibers, or providing a shell for a ballistic helmet. Again, the Examiner agrees that there is no disclosure whatsoever in this example of using para-aramide fibers, and the Examiner suggests that it would be obvious to use para-aramide fibers in view of RD305027A. However, there is nothing to suggest in Li or in RD305027A that using para-aramide fibers instead of ECPE filaments the same pressure bonding limitation would be the case. In any case, and in contrast to claim 13 or claim 14, the section of Li cited by the Examiner does not disclose nor suggest the features of claim 12, from which claims 13 and 14 depend. Thus, it is respectfully submitted that the combination of references does not disclose or suggest claims 13 or 14.

Thus, because the motivation given by the Examiner is not found in the cited art, because the cited art teaches away from the present claims, and because the cited combination fails to produce the claimed structure, Applicant submits that the Examiner has failed to make a *prima facie* case of obviousness with respect to claims 9, 10, and 12, and thus to claims 13 and 14 dependent from claim 12.

Reconsideration and withdrawal of these rejections is requested.

Claims 1 – 3, 5 – 8 and 11

Independent claim 1 recites a “[s]hell for ballistic helmet formed from a plurality of paraaramide fabric layers and bonding resin, wherein said fabric layers have areal density equal or less than 200 g/m², said shell has average thickness less than 6.5 mm and average areal density less than 7.5 Kg/m².” Claims 2, 3, and 4 – 8 depend from this claim.

Independent claim 11 recites a “[s]hell for ballistic helmet formed from a plurality of paraaramide fabric layers and bonding resin, wherein said fabric layers have areal density less than 200 g/m², and said plurality of layers is greater than 28.”

It is respectfully submitted that the Examiner’s rejection of claim 3 is in error, as this claim was cancelled in a previous response.

As noted above, Li is directed to a ballistic-resistant composite article, while RD305027A discloses a composite helmet made from tightly woven para-aramide coated with non-penetrating thermoplastic. The Examiner concedes that claims 1 – 3, 5 – 8 and 11 are novel over Li and

RD305027A, and that no combination of these references teaches the areal density of individual fabric layers.

The Examiner cites Bottger to cure the deficiencies of Li and RD305027A. Bottger, according to the Examiner, recites “ballistic grade fabrics comprising paraamide fibers having an areal density of 100/m² (page 2, 29 and page 5, 10).” The Examiner suggests that motivation to combine the Bottger reference with Li and RD305027A is obvious since “each individual layer contributes to the overall weight and thickness of the final shell composite.” (Office Action, page 4)

The Examiner’s purported motivation, and the rejection based thereon, are again traversed, because the motivation given by the Examiner is not found in the cited art, because the cited art teaches away from the present claims, and because the cited combination fails to produce the claimed structure.

Regarding any combination of Li and Bottger: it is to be noted that the Examiner was persuaded by the arguments presented in response to the previous Office Action regarding obviousness for claims 1-8 and 11, and the Examiner withdrew the obviousness rejection of Li in view of Bottger. Implicitly, then, the Examiner agrees that no obvious combination of Li and Bottger alone would disclose the features of claims 1 – 3, claims 5 – 8, or claim 11, or such a rejection would have been sustained.

Further, Bottger is concerned with a material that comprises a double layer of fabric, in which the threads in one layer are in transverse arrangement to those in the other layer and may have different properties. This material is notably different from that of Li. Li places particular

emphasis on aligning the fibers of multiple layers along a common direction (column 2, lines 29 to 49; column 4, lines 20-26), and thus there is no motivation for a man of the art upon viewing Li to consider Bottger, in which the fibers in the double layers are transverse to one another. Thus, Li teaches away from any combination with Bottger, and Bottger teaches away from any combination with Li. This teaching away is in no way affected by modifying either Li or Bottger in view of RD305027A.

Regarding any combination of Li and RD305027A: as argued above, Li is concerned with an impact resistant composite having one or more layers, in which at least one layer has a network of filaments having very specific properties, *not including a particular areal density*, while RD305027A teaches against coating or impregnating the actual fibers. In particular, and again as noted above, Li places particular emphasis providing the fibers in a prepreg or pultruded sheet (column 2, line 33; column 9, line 6), wherein the matrix material impregnates the individual filaments (see also column 4, lines 22-23; column 12, lines 32 to 42). Thus, there is no motivation for a man of the art to combine these two references.

Again, it must be stressed that the present invention claims specific combinations of features for providing an improved shell for a ballistic helmet made from para-aramide layers and bonding resin. By providing three unrelated references to suggest that claims 1 – 3, 5 – 8, and 11 are obvious, it is clear that such a combination has the benefit of hindsight. Li does not address fabric layer areal density at all, nor does it provide any suggestions regarding areal density in any way. Unquestionably, RD305027A does not address fabric layer areal density at all, nor does it

provide any suggestions regarding areal density in any way. Thus, neither Li nor RD305027A suggests or provides motivation for a combination with Bottger.

In any case, even if the three unrelated references were to be combined, such a combination would not disclose nor suggest the present invention.

Regarding Example 1 of Li (column 18, lines 40 to 45) previously cited by the Examiner, 164 layers are disclosed. If *arguendo* the three references were to be combined, providing para-aramide fibers and an areal density of 100g/m² for each layer (as disclosed by RD305027A and by Bottger, respectively), the overall areal density for the panel becomes 16.4 Kg/m², which is much higher than is claimed in claim 1.

Furthermore, there is no disclosure or suggestion of the other features of claim 1, such as for example the shell having an "average thickness of less than 6.5mm."

Regarding Example 3 of Li (column 19, lines 15 to 36) previously cited by the Examiner, 30 layers are disclosed. Again, if *arguendo* the three references were to be combined, providing para-aramide fibers and an areal density of 100g/m² for each layer (as disclosed by RD305027A and by Bottger, respectively), this would result in an overall areal density for the panel of 3kg/m². However, and as discussed earlier, it is not a proper combination of references to simply assign a particular areal density to one type of fabric just because it is disclosed regarding another type of fabric. This is even more the case where by doing so worse results would ensue. For example, Example 3 gives a V50 of 480 m/s (see Table 1, column 21 of Li), and this is considered to be an "inferior" result. There is no indication how, qualitatively, this result would be different with

para-aramide fibers, and in any case it is known from Bottger (page 5, lines 23, 24) that between 40 and 42 layers are required to provide a V50 of between about 481m/s and 471 m/s. Therefore by using 30 layers of areal density of 100g/m² a man of the art would expect to result in inferior V50 performance re Example 3 of Li, and would not know how to modify this result due to the substitution with para-aramide fibers, and thus would not consider the combination of RD305027A and Bottger at all. Either way, there is no disclosure or suggestion that the average thickness of shell would be less than 6.5mm in such a combination with so many unknowns. Certainly, if a man of the art were to combine the two references to try to obtain at least the same results, for example by providing 40-42 layers of the fabric of areal density of 100g/m², even made from para-aramide fibers, the thickness would be at least 8mm.

Regarding claim 5, Li discloses in column 11, lines 63 to 66 that the coating of the fabric or filaments may be between 1% and 150% by weight of the filaments. Claim 5 refers to the resin being less than 12% of the shell weight. Further, it is indicated in column 12, lines 10-14 that when the coating is less than 60% (by volume of the filament), additional matrix material is required. There is therefore insufficient disclosure in Li to suggest that the matrix used constitutes less than 12% of the weight of the component. This argument was found to be persuasive by the Examiner in response to a similar rejection in the previous office Action. It is respectfully submitted that RD305027A and Bottger do not add any further disclosure to disclose or suggest that the matrix used constitutes less than 12% of the weight of the component.

Thus, because the motivation given by the Examiner is not found in the cited art, because the cited art teaches away from the present claims, and because the cited combination fails to produce the claimed structure, Applicant submits that the Examiner has also failed to make a *prima facie* case of obviousness with respect to claims 1 and 11, and thus to claims 2, 3, and 5 8 dependent from claim 1.

Reconsideration and withdrawal of these rejections is requested.

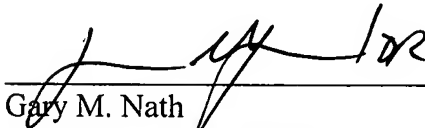
CONCLUSION

In light of the foregoing, Applicant submits that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

Respectfully submitted,
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